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Carolina's Gold Coast

The Culture of Rice and Slavery

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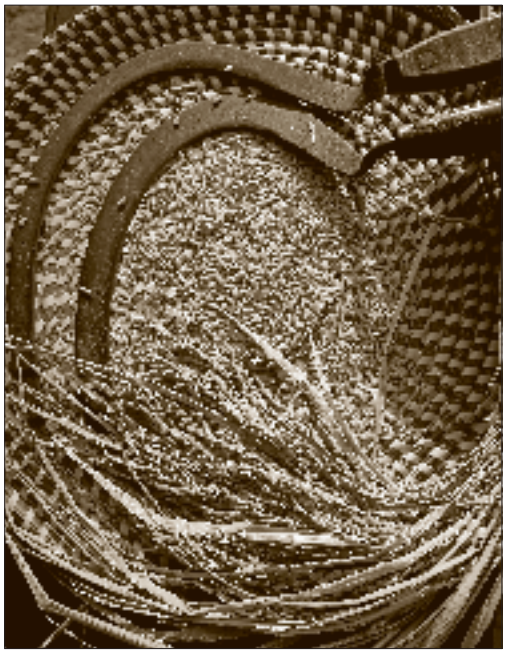

ON THE COVER:

These stalks of Carolina Gold rice were scythed from a Middleton Place plot built for the purpose of historical interpretation.

PHOTO/GRACE BEAHM

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TENDING HISTORY. *Jeff Neale, an historical interpreter at Middleton Place, a former plantation on the Ashley River, notes that weeding lowcountry rice fields was hot, exhausting work for slaves.*
PHOTO/GRACE BEAHM

Carolina's Gold Coast

The Culture of Rice and Slavery

by John H. Tibbetts

Ninety minutes after sunrise—the sun already scorching. Jeff Neale and Bob Sherman, sweating, hoe weeds in the rich, mucky soil of a quarter-acre rice field. On the floor of this steep-sided earthen bowl, the field gathers July's heat and humidity. Weeks of rain have greened the waist-high Carolina Gold rice stalks, but tall weeds threaten to out-compete and smother the crop.

The two men climb the embankment and wipe their faces, catching a breeze under the shade of a live-oak tree.

Soon they'll clean up for duty as historical interpreters, guiding visitors through Middleton Place located along a bank of the Ashley River, describing the former plantation's role in the lowcountry's slave-based economy.

Visitors often come by while they're working in the field, and Neale and Sherman will demonstrate traditional tools and techniques they use for historical accuracy.

"The biggest question we get?" Neale asked. " 'Are you hot?' "

The two men laugh together.

"Or: 'Where's the cotton?' " Neale adds. "They're all looking for cotton fields."

"Or Tara," says Sherman.

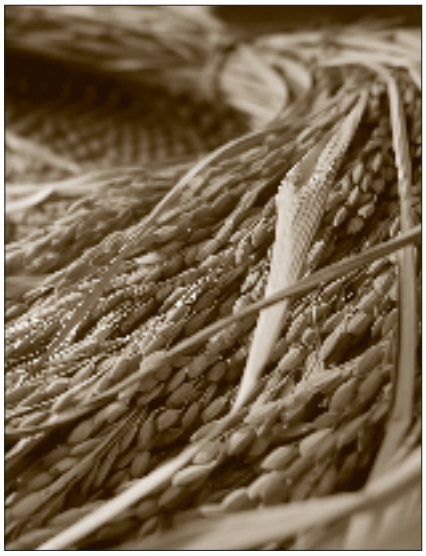
They laugh again.

"People don't realize that rice was such an important crop," says Sherman. "Even most of the locals don't know that. They've never seen a rice field before."

So *are* they hot?

"We're hoeing for a few hours, a few times a week," says Neale, serious now. "I woke up this morning in an air-conditioned bed and I'll go back there tonight. Slaves were in the fields tomorrow and the next day and the next."

Lowcountry wealth was intertwined with rice for generations. From the 1720s to the early 1860s, no other commodity was remotely as important to the region. Indigo, cotton, forest products, and manufacturing never came close to matching the riches that



GOLDEN CROP. ***Whose skill made lowcountry rice plantations so profitable? Africans? Or Europeans?***
PHOTO/GRACE BEAHM

planters drew from their rice estates.

Rice plantations shaped and reshaped the lowcountry geography and economy, making Charleston one of the richest cities in the world, but it was a wealth built primarily on slave labor.

With rough tools, slaves cleared immense wooded swamps. Then they constructed massive hydrological systems—dams, dikes, and floodgates (called "trunks")—used to irrigate rice fields where they sowed and weeded the grain.

From the crucible of slavery, lowcountry blacks and their descendants, known as the Gullah Geechee people, fashioned a unique creole culture, a blend of African and European influences. They created the only English-based creole language in North America and a distinctive cuisine based on rice.

After the Civil War, many freedmen bought small land parcels and became subsistence farmers and fishermen. Others eventually moved to cities and towns to find work.

Living in Jim Crow South Carolina, many lowcountry blacks held onto their creole traditions and language. The late Jack McCray, a writer and jazz impresario, once said that he learned English as a second language in elementary school while growing up in downtown Charleston in the 1950s. In fact, Gullah Geechee people preserved more of their African heritage than any other group of blacks in North America.

Yet the story of rice, slavery, and freedom has been long overshadowed by a broader southern narrative of King Cotton and the nostalgia of *Gone with the Wind*.

Now a coalition of historians, scientists, chefs, rice cultivators, and artists is trying to change that. A new nonprofit group, the Lowcountry Rice Culture Project, is celebrating rice agriculture's lasting influence in the region and beyond.

Its recent conference in Charleston highlighted an enduring mystery of the region's colonial history. Who were the important innovators behind the lowcountry's early rice industry? Whose knowledge made this vast agricultural system so successful—and so cruel to the men and women who did its hard labor?

Early Carolina planters must have learned how to cultivate rice in swamps from their African slaves, some scholars have argued. West Africans, after all, had grown rice for thousands of years. The technology of cultivating Carolina rice, then, must have been "black" in its origins.

But European colonists didn't require West African engineering to establish the complex dams, reservoirs, and drainage of early Carolina rice fields, other scholars say. Colonists could have drawn on European agricultural innovations in their home countries, particularly in the fens of England.

So was Carolina rice "black" in its origins? Or was it "white"?

Nearly all of the historical paper artifacts that document early rice cultivation have been lost. There are no surviving plantation journals and ledger books from Carolina's early decades of experimenting with and producing rice as a commercial crop. Ship logs show that rice was shipped to England beginning in 1699. But the early rice fields, abandoned centuries ago, have crumbled under storms, floods, and second- and third-growth forests.

"The truth is that we know very little" about Carolina rice cultivation from the time of the colony's founding in 1670 to 1699 when commercial rice planting emerged, says Max Edelson, an historian at the University of Virginia.

"History's written from what can be found; what isn't saved is lost, sunken and rotted, eaten by earth," notes Jill Lepore, an historian at Harvard University and a staff writer at *The New Yorker* magazine.

So what do we know about early Carolina?

European settlers did not reside in fine homes. Individual colonists did not own hundreds of slaves. Planters did not harvest significant cotton crops for export. Those features happened generations later.

Colonists, indentured servants, African slaves, and American Indian slaves lived together in ramshackle structures on isolated frontier settlements, growing scraggly Indian corn and other provisions amongst fire-blackened tree stumps.

Men and women of various races and ethnicities were mutually dependent, struggling to survive amid scorching droughts, winter freezes, and destructive spring floods. Each spring they searched for seeds that might flourish in Carolina's soils. That's how someone whose name is lost to history, scraping out a hard living, cultivated Carolina's first subsistence crop of rice and likely shared it in the fellowship of an autumn meal.

CAROLINA COWBOYS

Carolina was founded in 1670 when European colonists arrived on the banks of the Ashley River several miles downstream from Middleton Place. Many early settlers arrived from overcrowded Barbados, hoping to develop a valuable agricultural commodity that might rival Virginian

tobacco or West Indian sugar.

The Carolina colony was a commercial enterprise founded by eight powerful English nobles—known as the Lords Proprietors—who established vast new "baronies" and leased other parcels to settlers.

Several Lords Proprietors had a direct stake in the Royal Africa Company, a new monopoly established by King Charles II that would profit by purchasing and shipping enslaved Africans. From the beginning, Carolina was intended to be a slave-based colony.

The British Crown, meanwhile, was eager to gain the security and mercantile benefits of a new colony on the southeastern Atlantic coast without the expense of directly paying for it.

Many settlers, though, were disappointed when they arrived in Carolina. Colonists complained when they found only narrow, crooked seams of "good" oak-and-hickory land where they could grow their favorite English grains of wheat and barley. These preferred soils were sandwiched between the flood-prone, lower-elevation swamps and the dry, sandy, higher-elevation pine forests.

Colonists didn't huddle together on high ground. Instead, they "staked out Settlements scattering up & downe" along the Ashley River wherever they could find suitable agricultural land, one observer noted. Because colonial settlements were so far apart, settlers traveled and traded by canoe and boat.

Settlers got crucial advice from a native tribe, the Cusabo. Battered by European illnesses and raided by larger, stronger tribes from the south, the Cusabo had encouraged English colonists to settle along the Ashley River, hoping they would become allies against marauders. It was not a fruitful alliance for long. The English later turned on their friends during one of many destructive wars in the region.

Initially, though, the Cusabo taught Carolina colonists how to practice slash-and-burn agriculture in upland longleaf-pine forests. For thousands of years, American Indians had used fire to manage pine forestlands. Longleaf forests thrived from periodic burning, which cleared out heavy underbrush, encouraged the growth of new, tender plants for deer and other grazers, improved the soil for subsistence crops, and created more open, meadow-like environments that the English preferred.

Settlers, servants, and slaves chopped down trees for building materials, constructed rough frontier structures in forest openings, and cultivated soils as best they could.

In the first years of the Carolina colony, droughts and freezes killed their subsistence crops and their experimental plots of ginger, indigo, sugar cane, and cotton.

To survive, colonists relied increasingly on maize, which they called "Indian corn." Maize was more drought-resistant than wheat and barley, which colonists greatly preferred.

CULTIVATORS. *A rice raft with plantation hands near Georgetown, S.C., in 1904.*
COLLEGE OF CHARLESTON STEREOSCOPIC VIEWS/SPECIAL COLLECTIONS/ADDLESTONE LIBRARY

So the colony's subsistence dish became cornmeal mush—later called hominy. It was the indispensible food of the southern colonies. Although nutritious, it was considered a "coarse and meane fare." Whites and blacks disliked its taste and gritty texture. In the hard times, they might have eaten it morning, noon, and night. So they sought out other grains and legumes—beans and peas—to harvest from subsistence gardens to mix with maize and make it more palatable.

Some early settlers grew subsistence rice in the upland savannahs along with wheat and barley. A rice farmer typically sows seed on dry ground, floods the field as the crop grows, and harvests the grain when the field is dry again. For millennia, rice farmers around the world have manipulated water systems to drain and flood rice fields.

But a Carolina "upland" rice field, irrigated only by rainfall, would have been vulnerable to drought. That's why upland rice was known as "providential rice," notes Richard Porcher, a botanist and historian who studies colonial and antebellum lowcountry agriculture. Even an upland field with beneficial precipitation would have provided relatively poor yields compared to those of reservoir-irrigated fields.

DESIGN MATTERS. *During a tour of the South in 1938, Frances Benjamin Johnston, an architectural photographer, captured this image of a rice field at Mulberry Plantation near Monck's Corner in Berkeley County, S.C.*
PHOTO/LIBRARY OF CONGRESS

Early settlers fenced in their maize fields and gardens, allowing their cattle and pigs to forage half-wild through an open range from the upland pine meadows down into the swamps. In the evenings, livestock were gathered and driven to pens.

Salted beef, packed in barrels, was the colony's most profitable export product, as many Carolina settlers became cattle ranchers. Until the 1710s, the majority of black slaves were cowboys, "hunting" cattle, clearing land, and raising food in their own subsistence gardens.

When cowboys tracked through the lowcountry, they must have become familiar with plants and soils that reminded them of lowland areas in West Africa. Black slaves were among Carolina's first explorers of swamp borders and ecological edges. Throughout the colonial and antebellum eras, Africans would find refuge from the ravages of slavery in wooded swamps. Whites called such places evil or "dismal," believing they caused bad air, which was blamed for the dreaded "ague," the disease that later became known as malaria.

Perhaps a slave cowboy was the first to grow rice in a Carolina swamp patch irrigated by a spring or floodwaters of a freshwater creek. Perhaps he brought his harvest back to the settlement and mixed it with maize to bake bread. Maybe a colonist quizzed him about this crop and acquired seeds for his own garden the following spring.

Historians don't know where the first lowland rice was cultivated or by whom—or who provided the seeds. But it was common for early Carolina settlers, slaves, and servants to trade or pool their botanical and agricultural knowledge. Someone who cultivated a successful crop of subsistence rice in a lowland spot probably shared this knowledge with others.

Africans in early Carolina knew how to survive in a slave-based society. Some already knew English. Others

had Spanish or Portuguese names, so they presumably had passed through European hands. Colonists from Barbados and other sugar islands of the West Indies brought "seasoned" Africans who had already experienced forced labor and endured unfamiliar European diseases such as measles and smallpox.

In the early 1670s, black slaves comprised between one-fourth and one-third of Carolina's population. There were roughly equal numbers of adult males and females, and also their children. African slaves were allowed to marry, keep their families intact, and work in their own subsistence gardens, growing rice and other produce. Slaves often traded their goods for money or clothing. In 1700, a Carolina slave sold a packet of rice to John Lawton, the English explorer and naturalist.

By then, however, the character of Carolina's slave-based society was rapidly changing.

Many colonists profited by exporting not only salted beef but also timber and naval stores such as turpentine, pitch, and tar. These products, however, were considered unworthy of the Lords Proprietors' original visions.

The Proprietors called on colonists to cultivate exotic crops—olives, wine grapes, silk, indigo, cotton, and rice—that couldn't be grown in England and thus were more likely to become lucrative export commodities. Early Carolina settlers tried dozens of experimental crops, but each failed to become the new sugar or tobacco.

Finally, however, in the 1690s, Carolina planters and their laborers experimented with a variety of methods of growing rice commercially, a process of trial-and-error and of alert attunements to particular sites and environmental conditions that would allow some lowcountry families to get very rich.

RICHES IN DRY SWAMPS

In 1691, an ambitious plantation manager and "agricultural improver" named John Stewart reported that nearby Goose Creek planters were cultivating rice in cleared swamps.

TECHNOLOGY. ***Shawn Halifax, interpretive coordinator at the Caw Caw Interpretive Center in Charleston County, demonstrates how to open a gate (called a "trunk") to flood a remnant inland rice field.***
PHOTO/GRACE BEAHM

The Goose Creek men drove slaves to cut down swamp trees and "broadcast" large numbers of rice seed across the soil surfaces. This was the English way of sowing barley. The Goose Creek planters hoped that the natural moisture of the swampland soil and rainfall would allow a rice crop to flourish. But their rice came up so "full of weeds" that it hardly seemed worth the effort of harvesting, Stewart reported.

Stewart was the plantation manager of "Wadboo Barony" located at the confluence of the west branch of the Cooper River and Wadboo Swamp, near the present-day Old Santee Canal Park. Stewart was determined to show the Goose Creek men a thing or two about agricultural innovation.

Stewart was a boastful, bigger-than-life character, notes Peter H. Wood, an historian at Duke University and an influential scholar of lowcountry rice culture over the past four decades.

"The extraordinary Stewart was a Scottish frontiersman possessed of boundless energy, supreme vanity, and an outrageously florid prose style," Wood writes. "He professed expertise and optimism about every possible [colonial] resource from buffalo to caviar."

In 1691, at Wadboo Barony, Stewart grew rice on 22 different types of soil from the oak-and-hickory highlands to "Marsh Swamp," and claimed that all of his experiments would "all [hold] test to reason and truth."

Two plots yielded what Stewart called "glorious and hopeful" rice crops. His rice was "growing a yard high, and like the thickest barly f[ie]ld . . . green as grass."

From his experiments, Stewart discovered that cleared "dry swamplands" were indeed the best sites for rice cultivation, just as the Goose Creek planters had suspected.

Dry swamplands—later called "dry swamps"—were lowland forests of sweet gum, black gum, and red maple, plus hickory, live oak, and longleaf pine.

A colonial dry swamp was a

complex ecosystem with an intricate hydrology and soil composition. Its soils were loams—or mixtures—of clay, sand, silt, and rich organic material that varied in composition from site-to-site.

A typical dry swamp had many seams of "tight," almost impervious clay that prevented rainfall from infiltrating quickly. Heavy spring storms caused powerful floods called "freshets" that poured into dry swamps and held the woods under water for days or weeks.

Today, many stretches of the lowcountry would experience devastating flooding if not for a network of drainage canals and other flood-control structures built over centuries. African slaves constructed the region's original canals, which were later updated and improved. But slave-built, water-control systems continue to be evident in some of the lowcountry's bottomland swamps and other sites.

Lowcountry rice plantations required intensive maintenance and adaptations to local conditions. This 1849 plat shows the 3,200-acre Airyhall Plantation owned by Philip Sprice on the south side of the Ashepoo River. A freshwater creek (1) was dammed (2) with a flood-control gate called a "trunk," providing a source of irrigation for older, abandoned rice fields (3). Newer rice fields (4) were irrigated from a large reservoir called a "reserve" (5) created by channeling and damming a number of watercourses.

Early Carolina's dry swamps contained seams of nutrient-rich loam, especially in the floodplains of freshwater creeks. Over thousands of years, floods, large and small, would swell the creeks, allowing sediments and nutrients to settle out in the floodplains, bogs, and wet patches, forming deep layers of rich soil.

Lowcountry swamps, wrote the 18th century English explorer and naturalist Mark Catesby, were "impregnated by the washings from the higher lands, in a series of years are become (sic) vastly rich, and deep of soyl consisting of a sandy loam of a dark brown colour."

In the cleared dry swamps of Wadboo Barony, John Stewart drove slaves to sow rice. But instead of broadcasting seed over the soil surface in the English style, he had slaves drop seeds into indentations in the soil and then push soil over them. Once a field was flooded, the rice seed would not float to the surface and be wasted.

Maybe slaves recommended this technique to Stewart. West Africans similarly sowed rice by indenting soil with a heel, dropping seeds into the indentation, and then using the heel again to cover the seeds. Decades later, lowcountry slaves were seen following the same practice, and they continued sowing in this tradition for generations.

In any case, Stewart's rice experiments and his aggressive salesmanship encouraged other planters to look anew at dry swamps near their settlement edges.

In 1699, shipping records indicate that Carolina planters sent 300 tons of rice to England. On dozens of plantations, planters had driven hundreds of slaves to clear dry swamps and cultivate the region's first significant commercial rice crop. Soon, many more planters embraced rice. By 1712, rice farming had replaced cattle ranching as the lowcountry's most important agricultural activity. The first profitable stage of the "rice coast" was launched.

So was Stewart the founder of Carolina rice cultivation?

Hayden R. Smith, an environmental historian at the College of Charleston, is skeptical. "Stewart was always taking credit for ideas that could have come from other planters or slaves. I think slaves had the core knowledge that evolved into Carolina's rice-cultivation methods. Europeans got the gist of those methods and took off with them."

During low tide, a flood-control device (6) might have provided another outlet for releasing water from rice fields into the brackish Ashepoo River. During high tide, the same device might have prevented brackish water from entering the fields.
PLAT/CHARLESTON COUNTY REGISTER MESNE CONVEYANCE

But a major database of slave-ship records, recently analyzed for the first time, shows that West Africans from rice-growing areas did not arrive in significant numbers in Carolina during the crucial period of 1690-1710, according to a 2007 study in *The American Historical Review*. (The Trans-Atlantic Slave Trade Database comprises 35,000 slave voyages that forcibly brought 12 million Africans to the Americas.)

A small number of knowledgeable African slaves, however, could have provided crucial advice to rice planters. Innovations spread rapidly from settlement-to-settlement as Europeans shared rice-growing techniques. Carolina was a laboratory of agricultural experimentation, and early colonists showed keen interest in African and native peoples' knowledge of wild and cultivated plants. This spirit of cooperation prevailed among many slaveholders and the enslaved throughout Carolina's early decades.

It was a collaboration that quickly faded, though, when rice planting promised extraordinary riches, and lowcountry slavery became far crueler.

By the 1710s, the rice economy was displacing the cattle-and-timber economy. In this new plantation system, colonists took credit for the agricultural successes that unfolded. Africans, then, became effectively invisible.

"Slaves," says Smith, "lived in the shadows."

On an unseasonably cool late September morning, Smith stands on the shaded bank of Turkey Creek, a small watercourse in the Santee Experimental Forest, part of the Francis Marion National Forest.

As cars race by on Highway 41, interrupting the forest quiet, Smith points to a stagnant pond. Natural tannins in the swamp woodlands have colored it a deep black. Two centuries ago, this pond was probably just a tiny fraction of a reservoir covering about 100 acres.

"Rice planters were always trying to manage water," Smith says. "There was always too much water or too little water. So they built reservoirs to manage it."

ALTERED LANDSCAPE. ***Relatively wide, deep canals like this one in the Francis Marion National Forest allowed rice planters in the Turkey Creek watershed to control seasonal flooding and manage irrigation in rice fields, according to Hayden R. Smith, a College of Charleston environmental historian.***
PHOTO/GRACE BEAHM

Turkey Creek is a small "first-order" tributary—or a headwater—of the east branch of the Cooper River, which flows into Charleston Harbor just 15 miles away as the crow flies. Mount Pleasant is just a short drive east on Highway 41.

Along Turkey Creek can be found remnant after remnant of rice fields, canals, and dams largely reclaimed by woods. For years, Smith has tramped through the Turkey Creek watershed, studying the dry-swamp ecosystems and the abandoned fields and water-control structures.

Today dry swamps are found in many lowland stretches of the Outer Coastal Plain—areas up to 50 miles from the coast—especially in protected areas such as the Francis Marion National Forest and on private lands under conservation easements.

By the 1730s, the Turkey Creek watershed, the site of a plantation called Fishbrook, had become one of the lowcountry's most productive sites managed for "inland" rice cultivation as opposed to the "upland" cultivation in pine forests.

A typical inland rice field was built in a dry swamp downstream from a water source such as a spring or a blackwater creek. Slaves constructed earthen impoundments or they improved natural ridges to contain this water flow, creating a reservoir or "reserve." Farther down this gentle gradient, slaves would build a rice field, also bounded by natural ridges or slave-built embankments.

Rice planters deployed gravity to flood and drain their fields. When water was released from the reservoir, it flowed down-slope into the rice field, and then a second dam farther downhill prevented water from escaping.

Planters, however, needed a reliable mechanical device to open and close water flows at appropriate times. In West Africa, rice farmers used hollowed-out palm trunks embedded in impoundments as water-control pipes that could be plugged or unplugged to stop or release water flow. In Carolina, African slaves created water pipes from hollowed-out domestic palmettos and cypress. Europeans eventually introduced rectangular wooden valves, commonly used in the fens of southeastern England, as water-control devices.

Still, over centuries, the original African legacy in the lowcountry's water-control devices lived on. Today, water-control structures in remnant rice fields of the lowcountry are still

called "trunks."

On Turkey Creek, 18th century slaves built a long series of rice fields down the slope beyond the first impoundments. In turn, slaves continually expanded the original reservoir and built wide, deep flanking canals that allowed water to flow downhill to irrigate the newly constructed fields.

Hayden R. Smith points out that Turkey Creek's rice fields covered several linear miles of swampland. The fields traced the creek's gently downslope gradient, and each field was irrigated by the original reservoir.

Over time, planters and slaves learned where to build new rice fields by examining subtle variations in environmental conditions—soils, vegetation, land elevation, land slope, and water sources.

But impounding water was always a key element for successful rice planting. "Planters tried to get as much water as they could possibly secure," says Smith.

Today, almost two centuries after Turkey Creek fields were abandoned, Smith pauses near earthen dams that rise abruptly 10 feet or more above the forest floor and stretch straight as an arrow into the distance.

"It's easy here to tell which landforms are not natural ones," says Smith. "Nature doesn't make a perfectly straight, uniform ridge in a dry swamp. Only people do that."

HARD TOIL, DISEASE, AND DEATH

As lowcountry rice planters profited, they drove slaves harder. Slaves worked more days of each year, clearing forests and building the fields. They also labored longer hours each day, weeding rice plants in the new fields or processing the grain.

The British slave trade, meanwhile, rapidly expanded. After 1700, more and more black slaves were shipped directly to Carolina from West Africa instead of being seasoned first in the West Indies. Some of these Africans carried a virulent strain of *P. falciparum* malaria that killed great numbers of European settlers and English indentured servants in Carolina.

African slaves had limited resistance to *P. falciparum* malaria as part of their inheritance of the sickle cell gene and limited immunity from frequent exposure. But Africans suffered and died in great numbers, too. The very young were especially vulnerable; child mortality was extraordinarily high. Even today about a million people die of malaria each year, mostly infants in sub-Saharan Africa.

By clearing forests and building open-water reservoirs and rice fields, planters inadvertently created new breeding grounds for mosquitoes that further spread malaria and yellow fever.

18TH CENTURY VISITOR

"Carolina is in the spring a paradise, in the summer a hell, and in the autumn a hospital."

As the population of English and Scottish indentured servants declined, planters replaced them with Africans. By 1708, the colony had an enslaved black majority. Growing rice profits encouraged planters to buy larger numbers of African slaves who, in turn, were driven to build new mosquito-infested rice fields.

In the eighteenth and nineteenth centuries the lowcountry was "the deadliest disease region on the North American mainland," especially in the summer and fall, writes Peter McCandless, a professor emeritus of history at the College of Charleston, in a 2011 book.

"Carolina is in the spring a paradise," wrote an 18th century visitor, "in the summer a hell, and in the autumn a hospital."

After working brutally long days, lowcountry slaves were still required to grow their own food and make their own clothing. They lived in rags and suffered near starvation. Some ran away. Some burned down barns where exhausted slave women had been murdered by overwork, forced to "pound" rice with mortar and pestle for 16 hours a stretch. The rice plantation became a place where men, women, and children of all races went to early graves.

Rice planters were quickly shedding the contingent frontier thinking of their fathers and grandfathers and instead were reconnecting more fully with their European roots.

Culturally and economically, Carolina was linked to the British West Indies. Carolina and West Indian planters, like most other Europeans of that time, believed that they were racially superior to non-Europeans and thus were entitled—even obligated—to expropriate New World lands, by force if necessary.

Most Europeans assumed that they were morally correct in enslaving Africans and American Indians. The first anti-slavery movements did not emerge until many decades later—starting in the 1770s—and even then they were thought to be dangerously radical. Slavery, of course, continued as an institution in the American South until 1865 at the end of the Civil War.

The men who owned early Carolina's rice plantations lived within a different moral structure than we do today, historians point out. Planters took for granted that slaves would die early from extreme overwork, disease, neglect, injury, starvation, or severe punishments; and if slaves resisted, they would be responsible for bringing harsh punishment down on their own heads.

MUCH LOST TO HISTORY

In the 1750s, some planters began moving their rice fields into the lower-elevation cypress wetlands that formed

the floodplains of coastal rivers and tributaries. Slaves built massive earthen flood-control structures along the rivers and built trunks to manage tidal flows into and out of the fields. Planters now had access to larger, more reliable supplies of water, which led to larger crops and profits.

This became known as the "tidal" method. Tidal fields were the most valuable and heavily engineered agricultural sites in the world at that time. Most remnant rice fields that we see or hear about today are tidal ones.

Some fields, however, that might appear to be tidal ones do not, in fact, draw water from rivers. For instance, Middleton Place's rice fields are irrigated from an impounded upland creek. The adjacent stretch of the Ashley River has long been too salty for rice culture.

Many inland rice fields, including those along Turkey Creek, were productive longer than scholars once thought, says Smith of the College of Charleston. Although tidal rice planting was usually far more reliable and profitable, some planters continued cultivating inland fields until 1860.

After the Civil War, some tidal impoundments were repaired or rebuilt for rice production, which eventually faded out in the 1880s because of labor shortages, storm damages, and competition from other regions and countries.

In the early 20th century, wealthy northerners repaired and preserved many tidal impoundments for waterfowl hunting. These fields, in private and public hands, now cover nearly 70,000 acres along the state's tidal rivers.

By contrast, the vast majority of the lowcountry's inland rice fields have been lost or hidden. By 1910, many were clear-cut for lumber. After returning to nature as third-growth forests, many were acquired as conservation sites by government agencies or private landowners.

For instance, creeks and rivers throughout what is now the Francis Marion National Forest once provided irrigation for rice fields, both inland and tidal.

"Every major stream out there was modified at some point for reserve dams or water channels or canals for flat-bottom barges," says Robert T. Morgan, heritage program manager with the Francis Marion and Sumter National Forests. "But this goes beyond the national forest. These modifications occurred everywhere on private lands" in the lowcountry.

Most remnants of this inland-rice economy have disappeared from view.

"Nature has reclaimed tens of thousands of acres of inland rice embankments and rice fields under canopies of deep and dark woods," says Andrew Agha, an archaeologist at the Charles Towne Landing State Historic Site and the Archaeological Research Collective, Inc. "They have been grown over by palmettos, cypress, oaks, and pines." He estimates that only 10-to-20% of South Carolina's inland rice fields have been mapped.

"I used to look for as much African influence in the rice fields and impoundments as I could find," says Agha. "Now I realize that we may never know how much African knowledge influenced these rice fields and how much European knowledge did. Their influences seem all mixed together. But when I'm in those woods, I'm aware of walking on the work of Africans. I'm walking in shadows in places where Africans labored in the hot sun. You get a sense of the sweat and blood of the people who repaired those fields every year."

Flanking many rural lowcountry roadways are drainage canals that were originally built by slaves before the Civil War. "You can still see them today," says Agha. "What we experience when we explore the lowcountry landscape is a place that was created for rice. We see a centuries-old system of water control that created the lowcountry of today."

SUCCESSION. *Sea Grant scientists have been studying remnant rice fields of the Cooper River like this one at Mulberry Plantation. Some dikes have broken, allowing fields to return to their natural state as swamp forests. New management rules would allow some existing dikes to be repaired in the future.*
PHOTO/DANIEL TUFFORD/UNIVERSITY OF SOUTH CAROLINA

Gullah Geechee culture, against odds, survives

Beginning in the mid-18th century, lowcountry rice plantations changed in three important ways that allowed the Gullah Geechee culture to develop and survive.

As the most successful rice planters became extraordinarily wealthy, they fled from their swampy estates in "fever season" from June to November. The elite traveled north by sea to Rhode Island, and later in the year to southern mountains or coastal sites where ocean breezes limited the presence of mosquitoes. Whites who could afford to leave, did so, allowing some slaves a degree of breathing room from planters' control.

By the mid-18th century, many rice planters provided monthly rations of rice, which eased slaves' desperate search for food. Africans stretched these rations by growing subsistence crops in their private garden plots after their daily tasks were completed.

To supplement rice dishes, Africans would add field peas, greens, fish, or wild game or use leftovers from the planters' hog killings such as pig's feet, ears, heads, and entrails. Out of such recipes emerged famous lowcountry dishes such as Hoppin' John, a blend of field peas and rice.

For planters, it was probably a rational business decision to offer slave rations of "broken" rice, the discarded parts of the harvest that couldn't be sold for a profit.

"Broken rice might even have been preferred," says Jessica B. Harris, a food historian. "In Senegal, people want it because it soaks up the sauce better."

Rice was different from other major slave-produced commodities in the New World. It was food—good food. Cotton, indigo, and tobacco are not edible, of course. Sugar, coffee, and carob are delicious but not healthy as a diet centerpiece.

Slaves were attentive to subtleties of cultivating and processing rice, and they often grew it successfully in their own provision gardens.

Also by the mid-18th century, slaves and rice planters were negotiating a new form of labor—called the "task system"—unlike any other in American history. A slave would work a given task in a day, and once that task was completed, he or she would grow food in subsistence gardens, hunt or fish, and often trade their goods along riverbanks. This task system was later transferred to other coastal plantations that cultivated Sea Island cotton and other crops.

The task system, in short, gave the most productive workers more time away from plantation labor to produce goods on their own. Some slaves became part-time entrepreneurs.

After the Civil War, the Carolina rice economy struggled and then died out. For the Gullah Geechee people, however, rice sustained its central place through generations.

Living on isolated sea islands and in mainland pockets, Gullah Geechee folk continued to grow rice in their gardens and in some cases in freshwater swamps until the 1950s and '60s.

Many think of Gullah Geechee culture thriving only on sea islands. But it first emerged on plantations along tidal rivers and creeks for dozens of miles inland.

The "rice coast," celebrated today as the Gullah Geechee Cultural Heritage Corridor, stretching across 27 counties from Wilmington, North Carolina, in the north to Jacksonville, Florida, in the south.

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NEWS & NOTES

DeCenzo re-elected as board chair

David A. DeCenzo, Ph.D., president of Coastal Carolina University, has been re-elected as chair of S.C. Sea Grant Consortium's Board of Directors.


Dr. David A. DeCenzo

DeCenzo began his one-year term on January 1, 2014. "I look forward to serving another term as chairman of the S.C. Sea Grant Consortium," says DeCenzo. "The Consortium's work is important to our state, and it is a pleasure to work with such an impressive board and outstanding staff."

A native of Maryland, DeCenzo is the second president of Coastal Carolina University (CCU). Prior to his appointment as president, DeCenzo served as dean of CCU's E. Craig Wall Sr. College of Business Administration from 2002-2006, and was named provost of the university from 2006-2007.

After earning a Ph.D. in industrial relations from West Virginia University, he became a corporate trainer/employee development specialist with Blue Cross Blue Shield, an assistant professor at the University of Baltimore, and a professor, scholar, and administrator at Towson University in Baltimore.

"I look forward to working with Dr. DeCenzo again this year in his role as board chairman," says Rick DeVoe, executive director of the S.C. Sea Grant Consortium. "His leadership has been instrumental to the Consortium as it seeks to build on successes in serving the information needs of various stakeholders who depend on the coastal and marine resources of South Carolina."

Study analyzes Consortium's economic impact

The S.C. Sea Grant Consortium generated $8.9 million in economic impact in South Carolina in 2012, and $11.5 million in the tri-state region, according to a Sea Grant-funded study completed by the University of South Carolina Darla Moore School of Business.

In addition, the study notes that every $1 the state invested to support the Consortium and its coastal and ocean research, education, and outreach activities generated $26 in statewide economic output.

"We're proud of the work the S.C. Sea Grant Consortium performs and the value of that work to the State of South Carolina," says David A. DeCenzo, board chairman of the Consortium and president of Coastal Carolina University.

"The results of this study illustrate that the research, education, and outreach programming the Consortium undertakes is of significant value to South Carolina's economic, environmental, and social well-being," notes Rick DeVoe, executive director of the Consortium.

The study focused on four major economic contributions by the Consortium during a one-year period: total non-state external funding acquired, two volunteer-driven litter cleanups, the development of an independently run regional ocean-observing organization startup, and workforce-training programs targeted to the marine fisheries and aquaculture industries.

"There is no doubt that South Carolina's coastal region is one of its most valuable assets, which the S.C. Sea Grant Consortium helps to maintain," says Joseph Von Nessen, research economist in the Moore School of Business and the study's principal author. "But in addition, the Consortium also knows how to effectively leverage its own assets. For instance, the Consortium brings new federal dollars to the state and creates jobs that, on average, generate tax revenue which directly pays back approximately one-third of the Consortium's annual state appropriation."

The annual economic impact of $8.9 million in South Carolina is the dollar value representing the total value of all goods and services associated, either directly or indirectly, with the economic activities of the S.C. Sea Grant Consortium.

This impact corresponds to nearly $2.8 million in income for South Carolinians. In the tri-state region, consisting of North Carolina, South Carolina, and Georgia, the economic impact increases to $11.5 million, which is associated with $3.8 million in income.

A copy of the complete study, as well as an executive summary, is avail-

NEWS & NOTES

able on the Consortium website at www.scseagrant.org.

New climate specialist hired

Elizabeth ("Liz") Fly is the new coastal climate extension specialist with the S.C. Sea Grant Extension Program and the Carolinas Integrated Sciences and Assessments (CISA).

Liz received a B.S. in biology in 2006 from the University of Puget Sound and a Ph.D. in biological sciences in 2012 from the University of South Carolina. She recently completed a year as a John A. Knauss Marine Policy Fellow, working on the National Climate Assessment at the National Oceanic and Atmospheric Administration's Climate Program Office and the U.S. Global Change Research Program.

Dr. Elizabeth Fly

"A wealth of climate change-related information is out there," Liz says. "But it can sometimes seem an overload of information to someone with a specific question or problem."

She plans to be a point person for coastal-climate issues in South Carolina, working to consolidate the knowledge that already exists, identifying research gaps, and communicating this information in a publicly accessible way.

"It's important for communities to be involved in research, data collection, resiliency planning, and in the overall conversation as much as possible to feel invested in the issue," Liz says.

With her background in biology, Liz will also be assisting CISA in the development and implementation of coastal-drought indicators. CISA works with stakeholders across the Carolinas to incorporate climate information into the decision-making processes of coastal and water management.

For information, contact Liz at elizabeth.fly@scseagrant.org or (843) 953-2097.

Knauss fellows from S.C. schools selected

Two South Carolina graduate students were selected as fellows in the 2014 class of the prestigious John A. Knauss Marine Policy Fellowship. Nominated by the S.C. Sea Grant Consortium, the students were among 48 selected from nominees of 24 different Sea Grant programs.

During her fellowship, Chelsea Wegner, who has completed an M.S. in marine science at the University of South Carolina, will serve as special assistant to the deputy assistant administrator of the Office of Oceanic and Atmospheric Research at the National Oceanic and Atmospheric Administration (NOAA).

Chelsea will be a policy advisor to the Interagency Working Group on Ocean Partnerships as part of the efforts to implement the National Ocean Policy. She will also coordinate a special-issue publication depicting NOAA's advances in technology throughout the agency's history.

"I'm interested in work in coral reef conservation as a researcher or policy advisor with the federal government," she says. "The fellowship will give me exposure to new and relevant research issues" to help guide future career choices.

Katie Allen, who is completing a Ph.D. in integrative biology at the University of South Carolina, will spend her fellowship working with the Democratic staff of the U.S. House of Representatives' Committee on Natural Resources—Subcommittee for Fisheries, Oceans, Wildlife, and Insular Affairs.

"I will meet with stakeholders," Katie says, "write memos for hearings, draft talking points for members, draft questions for hearings, and conduct research on topics of interest to the committee."

Katie hopes that the fellowship will help in her career goal: to use her scientific background to inform public policy as it relates to fisheries and management of other natural resources.

To further the education of tomorrow's leaders, the National Sea Grant Office sponsors the John A. Knauss Marine Policy Fellowship Program, bringing a select group of graduate students to the nation's capital, where they work in the federal government's legislative and executive branches.

The students learn about federal policy regarding marine and Great Lakes natural resources and lend their scientific expertise to the federal agencies and Congress staff offices.

Each of the nation's 33 Sea Grant programs can nominate up to six students annually. Selections are then made competitively from among those nominations. Visit www.scseagrant.org/content/?cid=56 for more information about the Knauss fellowship.

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EBBS & FLOWS

National Hurricane Conference

Orlando, Florida
April 14-17, 2014

The primary goal of the National Hurricane Conference is to improve hurricane preparedness, response, recovery, and mitigation in order to save lives and property in the U.S. and the tropical islands of the Caribbean and Pacific. In addition, the conference serves as a national forum for federal, state, and local officials to exchange ideas and recommend new policies to improve emergency management. Visit hurricanemeeting.com for more information.

Carolinas Climate Resilience Conference

Charlotte, North Carolina
April 28-29, 2014

Join practitioners, researchers, and staff from local, state, and federal agencies to share information about climate-related tools, resources, experiences, and activities in the Carolinas. This will be an interactive conference geared toward networking and exchange among stakeholders and decisionmakers throughout the region. There will be roundtable discussions, poster sessions, and an "Ask the Climatologist" panel. For more information, visit www.cisa.sc.edu/ccrc.

Conference on Ecological and Ecosystem Restoration

New Orleans, Louisiana
July 28-August 1, 2014

A collaborative effort of the National Conference on Ecosystem Restoration and the Society for Ecological Restoration, this meeting will bring together scientists and practitioners to share information about programs and research. Scientists, policymakers, restoration planners, and stakeholders will discuss innovative methods and tools for combatting ecological destruction. Visit www.conference.ifas.ufl.edu/CEER2014 for more information.

Subscriptions are free upon request by contacting: Annette.Dunmeyer@scseagrant.org

ATTENTION SCHOOL TEACHERS! The S.C. Sea Grant Consortium has designed supplemental classroom resources for this and past issues of *Coastal Heritage* magazine. *Coastal Heritage Curriculum Connection*, written for K-12 educators and their students, is aligned with the South Carolina state standards for the appropriate grade levels. Includes standards-based inquiry questions to lead students through explorations of the topic discussed. *Curriculum Connection* is available online at www.scseagrant.org/education.